

REMARKS

Claims 21-31 and 35-36 stand rejected under 35 USC 112, second paragraph, arising from ambiguities in claims 21 and 35.

Claims 21-29 stand rejected under 35 USC 102 as being anticipated by Lings (US 4504189). Claims 21-22, 24, 26-29, 32-33, 35, and 37-38 stand rejected under 35 USC 102 as being anticipated by Liu (US 20020141863). Claims 21-22, 24, and 26-31 stand rejected under 35 USC 102 as being anticipated by Bessay (US 4500256). Claims 21-22, 24, 26-31, 32-33, 35, and 37-40 stand rejected under 35 USC 102 as being anticipated by Sato (US 5249922).

Claim 34 stands rejected under 35 USC 103 as being unpatentable over Sato (US 5249922). Claim 36 stands rejected under 35 USC 103 as being unpatentable over Liu (US 20020141863) or Sato (US 5249922).

Response to Rejections Under Section 112:

Applicants have amended claims 21 and 35 to resolve the definiteness issues. The amendment to claim 35 is supported at least by figure 2, figure 5, and paragraphs 84 and 85 of the originally filed clean specification. Applicants respectfully request the Examiner withdraw the 35 U.S.C. § 112, second paragraph rejections.

Response to Rejections Under Section 102:

Applicant has replaced “surface” with “form curve” as supported at least by paragraph [00037] of the originally filed specification, element 39.

Applicant has further amended claim 21 to include

wherein rotor-side instantaneous tangents and stator-side instantaneous tangents intersect a longitudinal plane, the plane extending from the axis of rotation of the rotor and passing through a point disposed in a middle region of the leading edge, and wherein portions of rotor-side instantaneous tangents and stator-side instantaneous tangents radially outward from the points of intersection are on a **same side of the longitudinal plane**.

This is supported and best understood at least by figure 2, auxiliary tangents labeled 17, 17” and 18, 18”. This is further supported by figure 4, element 17”, and figure 5 element 18”. When viewed in figure 2 it can be seen that the portion of these auxiliary tangents, radially outward of their intersection with a plane defined by line 26, are on the same (in this case left) side of the

plane defined by line 26. This results because blade form curve 39 takes on a substantially serpentine shape (a reverse “s”), when viewed along the flow direction, unlike the presented references.

Lings

Regarding claim 21, Applicant can find no teaching in Lings regarding Applicant’s claimed blade configuration. Applicant notes that a blade may be a collection of stacked blade components, however, rotation about the blade form curve does not teach Applicant’s claim language, and in this reference it appears the blade curves are straight and parallel to each other. Applicant respectfully requests the 35 USC 102 rejection of claim 21, and dependent claims 22-29, based on Lings, be withdrawn.

Liu

Regarding claim 21, as can be seen in figure 3, when auxiliary tangents of stack axis 50 of Liu taken at the stator and rotor ends, the portions of the auxiliary tangents radially outward from the intersection points with Applicant’s claimed plane would be on opposite sides of the claimed plane. (i.e. they would diverge on either side of the plane as radial distance increased.) Thus Liu does not teach Applicant’s claim 21 language. Applicant respectfully requests the 35 USC 102 rejection of claim 21, and dependent claims 22, 24, and 26-29, based on Liu, be withdrawn.

Applicant has amended claim 32 to claim “wherein the rotor-side end blade form curve is inclined toward the delivery side, and the **stator-side end blade form curve** is inclined with respect to the fluid flow direction and **inclined toward the delivery side.**” Claims 33-36 have been amended to reflect this change, which is supported as noted above. The stator side stack axis 50 of Liu is not inclined toward the delivery side 36, but is instead inclined toward the suction side 38. Thus, Liu does not teach Applicant’s claim 32 limitations. Applicant respectfully requests the 35 USC 103 rejection of claim 32, and dependent claims 33, 35, and 37-38, be withdrawn.

Bessay

Regarding claim 21, Applicant can find no teaching in Bessay regarding a blade form curve / stack axis. Figure 7 depicts nothing related to a blade form curve, and all figures appear to teach a straight blade form curve. Thus, Bessay does not teach Applicant's claim 21 limitations. Applicant respectfully requests the 35 USC 102 rejection of claim 21, and dependent claims 22, 24, and 26-31, based on Bessay, be withdrawn.

Sato

Regarding claim 21, as can be seen in figure 2, were auxiliary tangents of the blade curve form of Sato taken at the stator and rotor ends, the portions of the auxiliary tangents radially outward from the intersection points with Applicant's claimed plane would be on opposite sides of the claimed plane. (i.e. they would diverge on either side of the plane as radial distance increased.) Thus Sato does not teach Applicant's claim 21 language. Applicant respectfully requests the 35 USC 102 rejection of claim 21, and dependent claims 22, 24, and 26-31, based on Sato, be withdrawn.

Regarding claim 32, the stator side blade form curve of Liu is not inclined toward the delivery side, but is instead inclined toward the suction side. Thus, Sato does not teach Applicant's claim 32 limitations. Applicant respectfully requests the 35 USC 103 rejection of claim 32, and dependent claims 33, 35, and 37-40, be withdrawn.

Response to Rejections Under Section 103:

Claims 34 and 36 depend from claim 32 and are rejected under Sato. As argued above, claim 32 survives application of Sato, and thus claims 34 and 36, which depend from and include all the limitations of claim 32, must also survive application of Sato. Applicant respectfully requests the 35 USC 103 rejections of claim 34 and 36, based on Sato, be withdrawn.

Similarly, claim 36 depends from claim 32, and is rejected under Liu. As argued above, claim 32 survives application of Liu, and thus claim 36, which depends from and includes all the limitations of claim 32, must also survive application of Liu. Applicant respectfully requests the 35 USC 103 rejection of claim 36, based on Liu, be withdrawn.

Conclusion

For the foregoing reasons, it is respectfully submitted that the objections and rejections set forth in the outstanding Office Action are inapplicable to the present claims. Accordingly, Applicants respectfully request that the Examiner reconsider the objections and rejections and timely pass the application to allowance. All correspondence should continue to be directed to our below-listed address. Please grant any extensions of time required to enter this paper. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

Dated: Nov. 11, 2009

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